

REMARKS/ARGUMENTS

Applicant would like to thank the Examiner for the careful consideration given the present application. The application has been carefully reviewed in light of the Office Action, and amended as necessary to more clearly and particularly describe the subject matter which Applicant regards as the invention.

Claims 25, 28, 33 and 35 have been amended. Claims 36 and 37 have been added.

The Examiner rejected claims 25–35 under 35 U.S.C. 103(a) as being unpatentable over Madden et al., U.S. Pat. No. 6,249,285 in view of Toh U.S. Pat. No. 5,537,494.

Madden does not teach all the limitations of claim 25. More specifically, Madden does not teach “numerically relating said geometric contours with geometric objects in the three-dimensional environment, three-dimensional positions and volume shapes of said geometric objects in the three-dimensional environment being defined by three-dimensional parameters including numerals.” Referring to column 3, lines 10–25 of Madden, Madden discloses a method to estimate the structure of a three-dimensional scene from multiple two-dimensional images. Madden explicitly states in lines 13–15 that “[t]he technique involves displaying a visual representation of an estimated three-dimensional scene structure...” Further, referring to column 5, line 43 through column 6, line 7, the technique involves capturing images using video recording equipment, such as a VCR, a VTR, a DDR, a camera, etc. The captured images are displayed on a computer monitor and are used to generate a depth map or surface mesh that characterizes the scene. A user then uses mark-up tools to further refine the depth map or surface mesh. The technique in Madden captures images and simply generates a representation of a three-dimensional scene on a computer monitor. The computer screen is not a three-dimensional environment but rather a tool used to generate a representation of a three-dimensional scene. Madden merely shows three-dimensional objects on a two-dimensional

display. The objects are three-dimensional only in the eye of the viewer. Thus, Madden does not teach a three-dimensional environment. Therefore, Madden does not teach all the limitations of claim 25. Toh also does not teach a three-dimensional environment. Therefore, even if combined, the references do not meet every limitation of the claims.

Further, there must be a basis in the art for combining references. Obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention absent some teaching, suggestion, or incentive supporting the combination. *ACS Hospital Systems, Inc. v. Montefiore Hospital*, 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984). The Examiner must be able to point to something in the prior art that suggests in some way a combination with another reference in order to arrive at the claimed invention. Here, the Examiner states that adding the detecting of discontinuities capability of Toh to Madden would speed up the scene analysis performed by Madden. Madden, however, does not suggest that detecting the discontinuities of captured image would increase the efficiency of the scene analysis. Referring to column 5, line 57 through column 6, line 52 of Madden, Madden discloses several methods of refining or improving the depth map or surface mesh. None of the methods in Madden disclose detecting discontinuities. Thus, there would be no motivation for one skilled in the art to combine Toh with Madden. Therefore the Examiner improperly combined the discontinuity detection of Toh with the scene analysis of Madden.

Madden does not teach all the limitations of claim 26. More specifically, Madden does not teach "...the geometric contours include dots, straight lines, ellipses, and the objects include circles, cylinders, straight lines and dots." Referring to column 5, line 56 through column 6, line 7, of Madden, Madden discloses identifying elements as being straight lines, planes, circles, etc. These elements, however, are used to modify the depth map or surface mesh as disclosed in

column 5, lines 56–57. Thus, Madden does not teach using geometric abstractions to represent geometric contours. Therefore, Madden does not teach all the limitations of claim 26.

Madden does not teach all the limitations of claim 31. More specifically, Madden does not teach “wherein said geometric projections are determined from the position of said camera and positions of said geometric objects in the representation.” Referring to column 6, lines 8–22 of Madden, Madden teaches using camera parameter estimates and other sensor data to estimate the relative depth of the original 2-D images. Madden, however, does not disclose that a geometric projection is determined from the combination of the position of the camera and the geometric objects. Thus, Madden does not teach geometric projections. Therefore Madden does not teach all the limitations of claim 31.

Madden does not teach all the limitations of claim 32. More specifically, Madden does not teach “wherein the representation initially comprises information on at least the positions and shapes of said geometric objects which is inputted manually or from a computer description file, and the representation is created in progressively amending said information so that the match between the projection of said geometric objects and said geometric contours of said at least one image is improved.” Referring to column 3, lines 23–25 of Madden, as the Examiner cited, Madden discloses reexecuting an algorithm until the user is satisfied with the scene. Further, as explained above, Madden discloses a user using mark-up tools to further refine the depth map or surface mesh, see column 5, line 57 through column 6, line 7. As these two passages indicate, Madden focuses on refining or improving an entire scene such as a depth map or surface mesh and is not focused on improving at least a single image. Thus, Madden does not teach improving at least a single image. Therefore Madden does not teach all the limitations of claim 32.

Claims 27–30 and 33–35 depend either directly or indirectly on claim 25, thus, all arguments pertaining to claim 25 are equally applicable to these claims and are herein incorporated by reference.

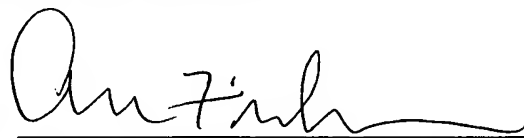
Madden nor Toh, nor the combination thereof, teach all the limitations of new claims 36 and 37. More specifically, neither Madden nor Toh teach “wherein a geometric projection of the contour of the three-dimensional object is performed on each new image before detecting discontinuities of appearance in the new image” and “wherein said projected contours are adjusted relatively to the image discontinuities.” As mentioned above, regarding claim 31, Madden does not disclose using geometric projections. Therefore, Madden nor Toh nor the combination thereof teach all the limitations of new claims 36 and 37.

In light of the foregoing, it is respectfully submitted that the present application is in a condition for allowance and notice to that effect is hereby requested. If it is determined that the application is not in a condition for allowance, the Examiner is invited to initiate a telephone interview with the undersigned attorney to expedite prosecution of the present application.

If there are any additional fees resulting from this communication, please charge same to our Deposit Account No. 16-0820, our Order No. 34191.

Respectfully submitted,

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